

# Concrete Mattress System

- **Micro Concrete Mix**

The recommended Micro Concrete Mix is generally a 2:1 ratio of sand:cement. The water:cement ratio needs to be determined on site using a Proserve Flow Cone but will generally be in the order of 0.7:1.

This gives a highly fluid mix generally suitable for :-

- a) Pump placement with typically a 50 mm Ø hose which is a size easily handled by divers.
- b) Flow and fill within mattress and forms.

- **Fabric**

The fabric used in the manufacture of Fabriform units is a specially woven Polyamide/ Polypropylene fabric, that is designed to avoid entrapped water voids and allow for the bleeding described below. Also the use of fabric allows the concrete to be protected from scour and erosion until the mix acquires sufficient strength. This also allows the concreting to be conducted in turbulent water without the need for sheet piles or rigid forms.

- **Free Water Bleed**

The porous fabric allows the free water to bleed from the formwork reducing the water:cement ratio down to approx 0.4, this has the following advantages :-

- a) Filling head pressures are dissipated often producing a mechanical sett in around 15 mins.
- b) Increases strength and abrasion resistance—there can be up to a 10 N/mm<sup>2</sup> increase in the concrete strength when compared to a conventional form, using the same mix proportions.

Tests have determined that cement loss averages about 1/4 % of cement content. It has been demonstrated that the pH rise will be no more than 1.0 (well within the range of potable water) if:-

- 1) In still water, the total volume is at least 60 times the volume of concrete pumped
- 2) In moving water, rate of concrete injection in m<sup>3</sup>/ hr does not exceed the rate of water flow in m<sup>3</sup>/ min

- **Concrete Placement**

Concrete is pumped into the matt via filler sleeves, which are sewn into the mattress during the fabrication process, using typically a 50 mm Ø hose connected to a pump.

- **Suitable Plant**

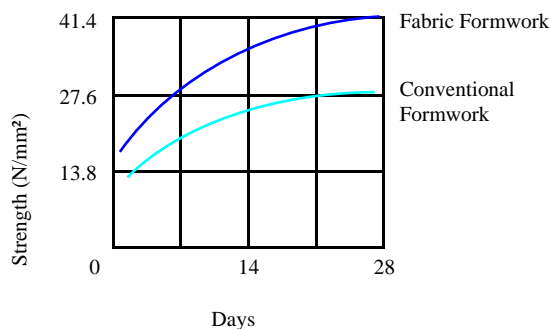
Concrete pumping plant should have a capacity of around 10-20 m<sup>3</sup>/hr. Suitable pump types can be hired from Construction Equipment Ltd. Tel. 01494 715472

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**Fabriform**



**Comparative Formwork Strengths**